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ABSTRACT

In 1990, the Online Catalog Advisory Committee (OCAC) of the University of Illinois at Urbana-Champaign (UIUC) charged a subcommittee with developing and implementing ways to measure the impact of the expanded online catalog on staff, users, collections, and library operations. The UIUC's online public access catalog, ILLINET (Illinois Library and Information Network) Online, links the circulation systems of about 40 institutions in Illinois. The subcommittee reviewed literature in this area and developed a two-stage study, with baseline and comparative data at one year. Instruments to measure impact were developed and introduced to staff in orientations at 36 sites. Over 8,000 questions were asked of university patrons and external users of the library in each of the two years. Study results make it overwhelmingly clear that the new online services are very popular and are being used at an increasing rate. It is important that staff and users be aware of how to make effective use of these resources. Recommendations are made for improved training for staff and users, improved and enhanced data collection for evaluation, improved resource availability and enhanced hardware, and increased attention to the availability of periodicals. Appendixes contain the data collection instruments, a sample of the data collection code, and 11 statistical tables. (Contains 20 references.) (SLD)

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# THE EFFECT OF EXPANDED ELECTRONIC ACCESS TO PERIODICAL LITERATURE ON LIBRARY USERS, COLLECTIONS AND OPERATIONS

Final Report of the
OCAC Measurement & Evaluation Subcommittee
University of Illinois Library
at Urbana-Champaign
4 April, 1993

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**EXECUTIVE SUMMARY**: Final Report of the OCAC Measurement & Evaluation Subcommittee (6/22/93)

In 1990, the UIUC Library's Online Catalog Advisory Committee charged a new subcommittee, the Measurement and Evaluation Subcommittee with measuring the effect of this expanded access on the Library. The specific charge to the Subcommittee was to "develop and implement ways to measure the impact of the expanded Online Catalog on staff, users, collections and library operations; and to evaluate the expanded Online Catalog with respect to CD-ROM databases, searching periodical databases online through dial-access and print indices." The Subcommittee's work spanned a period of two years, with its charge being divided into a series of measurement and analysis activities:

- Reviewed the research literature in the area;
- Developed a two-stage study: a baseline stage, measured just prior to the implementation of the expanded access; and a comparative stage, to be measured one year later;
- Developed a series of hypotheses which would form the basis of the data collection and analyses;
- Formed teams to devise and test the forms needed to collect the data;
- Provided staff orientation at 36 sites to promote consistency in data collection;
- Input the data in machine readable form; and converted it into a form compatible with the SPSS statistical analysis program;
- Analyzed the data to test the hypotheses and held the analyses to very strict levels of statistical significance.

## CONCLUSIONS

UIUC patrons and external users of the Library collections are shifting from what could be termed 'traditional printed library resources' to electronic resources. Although not all users have moved toward electronic resources in the same proportion, all have shifted in that direction. All that distinguishes one group of users from another is the magnitude of the shift.

There was virtually no change in the absolute number of questions asked about serials and periodical finding tools from 1991 to 1992, dropping from 8258 to 8184. However, there were substantial changes in the types of questions asked. There was an 18% drop in questions relating to serials holdings (significant to the .101 level) and a 12% drop in questions about serial locations (.176), totaling 903 questions 'not asked' in these two areas. In 1992, there were 1072 questions asked about how to use and interpret the Expanded Online Catalog. Between 1991 and 1992 patrons' overall use of electronic resources to find journal articles rose from an average of 25% to an average of 52%. Further, it was revealed that frequent and moderate users of the Online Catalog made a widespread shift to the use of electronic resources for finding journal articles, while patrons who rarely used the online catalog tended use self-supplied sources to find journal articles in the Library.

## RECOMMENDATIONS

The point that became overwhelmingly clear during this study was the popularity of the new online services, and the need for staff and users to be informed about how to make effective use of these resources. Based on the results of the data analysis, the Subcommittee makes the following recommendations for the Library to consider:

1. Develop and implement a comprehensive training program to insure consistency of staff and user expertise with electronic resources throughout the Library organization;
2. Devise and implement ongoing methods to collect, examine, and analyze data that reflect the effect of electronic access to journal article information on staff, collection, and users;
3. Investigate the full range of resources that might be added to the Online Catalog to serve its diverse users, both local and external;
4. Add terminals to provide greater on-site access to our expanding online resources;
5. Evaluate the effect of the unavailability of journal articles at the UIUC Library due to theft, mutilation, or journal cancellations on access to periodical literature by Library patrons.

## I. Introduction

### A. Statement of the Problem

Many research libraries with online public access catalogs have expanded this search environment to include journal citation and abstract information. The University of Illinois at Urbana-Champaign Library identified the inclusion of electronic access to journal article information as an important priority, based on the assumption that it would improve patrons' access to periodical literature. The determination of appropriate levels of staff service and the resources necessary in order for users to realize the maximum benefits of expanded access have also been of primary concern. This paper describes the methods employed to analyze information on periodical use and its associated library support activities, both before and after the expansion of the online catalog to include journal citation databases.

### B. Background

#### 1. Description of ILLINET Online

The University of Illinois' online public access catalog, ILLINET Online, was developed in the late 1970's and early 1980's. A shared system (ILLINET Online) now links the circulation systems of approximately 40 institutions in Illinois. Additionally, dial and Internet access is available to an unlimited range of users. A user interface that promotes the concept of the scholar's workstation (Mischo, et. al., 1990) has been made available within the UIUC Library, and it continues to evolve as new technical applications and services are integrated into the catalog.

#### 2. Mounting of Journal Article databases on ILLINET Online

In June, 1991, the Library began to provide electronic access to a number of databases of journal article, indexes, including Current Contents, several Wilson indexes, ERIC, and CARL Uncover. These databases were made available from the same terminals that provided access to the Library's Online catalog, ILLINET Online. A locally-developed interface facilitated natural language searching of all of these databases, with the exception of CARL Uncover, which provides its own interface. Since access to journal citation databases had now become an added function in the existing online catalog, the library

named the sum total of these services ILLINET Online Plus (IO+). While it is apparent that these developments have had an effect on the level of use of the Library's collections and services, the degree of effect on the Library's collections, staff, and users was speculative at the outset of this project.

C. Charge to the Subcommittee

The Library's Online Catalog Advisory Committee (OCAC) advises the University Librarian on matters concerning the OPAC, and coordinates the activities of technical and user support groups, as well as the Library's professional and support staff to implement needed changes. In the spring of 1990, the Measurement and Evaluation Subcommittee of the OCAC was formed with the charge to "develop and implement ways to measure the impact of the expanded Online Catalog on staff, users, collections, and library operations; and to evaluate the expanded Online Catalog with respect to CD-ROM databases, searching periodical databases online through dial-access, and print indices." This report describes the research design and methods, presents the findings of a two-year study, and makes recommendations for future development in the area of enhanced periodical access in the UIUC Library.

II. Literature Review

Recognizing that a number of institutions had already expanded their online catalogs to include journal article access, a thorough exploration of the research literature was undertaken and the work of other researchers considered. The existing literature provided either detailed accounts of projects at other institutions, or concentrated on assessing system retrieval performance. Although not all works are cited in this report, a bibliography of resources consulted by the Subcommittee is included.

The current literature contributed to the group's ideas about what the expanded search environment would include, what changes in user behavior could be anticipated, what effect on library services, staff, and activities would be the consequence of these user behavior changes, and how this effect had been measured in other studies. The Melvyl Medline Project ("Final Report," 1990) was of particular interest, as it described a combination of user transaction log data and user survey data to evaluate the provision of expanded access. The assessment study employed at the National Library of Medicine employed verification

and limits testing to rate the technical performance of a new automated system, and a multiple-technique approach to assess user acceptance of the system (Siegel, et.al., 1984). However, it was determined that these evaluative techniques focused on system performance, and thus, were not applicable to our study.

The difficult fiscal constraints currently affecting all libraries, manifested in acquisition budget reductions and staffing cutbacks, further convinced the group that it was necessary to design a study that introduced measures of the effect of this new service on library users, collections and operations.

## III. Methodology

### A. Research Design

How does expanded access to the periodical literature affect the library? This general question framed the research design used in this study. We were presented with an opportunity to carry out an experiment, albeit without many of the controls on the experimental environment that we would have preferred under laboratory conditions. The decision to expand access to the periodical literature through our online catalog was already made. Fortunately, the time required to implement the expanded access capability was long enough to enable the investigators to collect baseline data before the expanded services were made available to the user community. This baseline data was used, in comparison with similar information collected after implementation, to determine what effects the expanded access had on user journal article-seeking activities, staff, collections, and equipment.

#### 1. Definitions

The terms 'periodical' and 'journal' are used throughout this report to refer to the specific type of serial publications most often indexed by print and electronic indexing and abstracting services. These terms are employed when we refer to the specific information patrons seek (e.g., a journal article). The term 'serial' is used as a broader reference to serial titles.

In the context of this study, 'access' was defined as the use of periodical literature per user. There are two types of access: physical (the actual use of an item); and intellectual (the opportunity to use an item). Therefore, given the same number of users, accessibility can be said to increase if more periodical literature is used (either physically or

intellectually) or examined than during a previous, comparable period in time. It was posited that physical and intellectual access (measured by the ratio of the number of periodicals used per user) to the periodical literature may be increased or decreased due to the existence of certain conditions.

It was posited that increased access could affect several elements of staff costs and workload, such as an increase in the number of reference questions concerning periodicals, an increase in re-shelving, circulation, and interlibrary loan requests for periodical articles, more journal theft and mutilation, and more wear-and-tear on support equipment such as printers, microform reader/printers, and photocopy machines.

2. Measurement Method

For the baseline measurements, data was collected during two weeks in February, 1991. This took place before the implementation of the expanded access capabilities, which occurred in May of 1991. Comparable data was then collected during two weeks of February, 1992, almost one year after these access tools had been made available to the user community. Because of the vital role the Library staff played in data collection, we conducted an extensive orientation program that focused on the goals of the study and the importance of staff cooperation on its success. We identified the data sampling time to coincide with the highest level of use of the Library compatible with the effort of data collection; thus we were constrained from doing the study during the absolute peak period of use of the Library. Each set of data was analyzed separately and then compared (see Limitations). These data were collected on a library-wide basis at 36 data gathering sites. They consisted of the following measurements, all dealing with serials:

1. Re-shelving of bound serial volumes and unbound issues;
2. Photocopy machine and computer printer servicing;
3. Serial mutilation;
4. Citation sources used by patrons to find journal articles;
5. Interlibrary loan requests for photocopies of journal articles;
6. Reference questions asked about serials;
7. Demographic information on the user population.

3. Hypotheses

Several hypotheses were developed in conjunction with the study, all of which were cast

in the form of null hypotheses:

H1. Expanded access would have no significant effect on the number of bound serial volumes and unbound issues reshelved.

H2. Expanded access would not significantly increase the amount of photocopy machine and computer printer servicing.

H3. Expanded access would not significantly increase the amount of serial mutilation.

H4. Expanded access would have no significant effect on the types of citation sources chosen by patrons to identify journal articles.

H5. Expanded access would not significantly increase the number of interlibrary loan requests for photocopies of journal articles.

H6. Expanded access would not significantly increase the number of reference questions asked about serials.

H7. Expanded access would not cause a significant change in the type of reference questions asked about serials.

H8. A user's status in the University community is not a predictor of journal article seeking behavior.

H9. The frequency with which a patron uses the online catalog is not a predictor of use of IO+.

H10. Expanded access would not cause a significant change in the journal article seeking activities of users in libraries clustered into broad subject disciplines (Arts and Humanities, Life Sciences, Physical Sciences, Social Sciences, General population (Reference, Documents, Newspaper, Undergraduate, University High School, Circulation and Bookstacks).

4. Assumptions

There were several assumptions made about the environment in which this study was conducted during the periods when both the baseline and comparative data were gathered:

1. User Community: It was assumed that the user community of the University of Illinois at Urbana-Champaign remained stable in terms of numbers of faculty, students, and other users from 1991 to 1992. Information from the campus indicates no significant changes in any group of users during this time.

2. Number of serials physically available: It was assumed that the number of serial titles physically available in the Library remained approximately the same.

3. Ease of borrowing: It was assumed that the ease of physically borrowing an item either on-site or through interlibrary loan did not change.

4. Reshelving instructions: It was assumed that instructions to users regarding reshelving serials did not change.

5. Equipment: It was assumed that the quality and quantity of photocopiers and computer printers did not change.

6. User behavior: It was assumed that there was nothing to change user behavior with regard to mutilation of serials.

7. ILL: It was assumed that there was no change in interlibrary loan procedures that would affect the number of requests made.

8. Reference: It was assumed that there was no change made in reference policies to account for either increased or decreased use.

9. Library hours: It was assumed that there was no susbtantial change in library hours, thereby affecting the amount of time available for serial access.

10. Serial availability: There were several assumptions relating to increased access to serial publications. It was assumed that:

    a) There was an increase in sources available for locating journal articles in the online catalog;

    b) There was an increase in the amount of location and holdings information available for serials;

c) The online catalog interface made it convenient to find location information about serials;

d) There was an increase or change in CD-ROM databases.

11. Representativeness of samples: It was assumed that the two samples taken were representative of the population being studied.

5. Procedures

Data gathering forms, corresponding to the areas listed above, were designed and refined by the committee, and by pilot testing among staff and users (Appendix A.) Training sessions were held for those who would be gathering the data. This was done in order to make data gathering as uniform as possible and to ensure the reliability of the data. Forms were distributed to data collection points one week prior to the beginning of the study and collected after the end of the study period. The gathered data was then converted to machine-readable form by the study team using the QPL data inputting software. Based on this evaluation, the program HRD-QPL, available from the Human Resources Department of the GAO (Government Accounting Office), was purchased. QPL (Questionnaire Programming Language) has several inter-related components which assist in the development of the questionnaire, display it in a form suitable for interviewers, allow direct input of the data into a personal computer as it is being collected by the interviewer (or an alternative 'keypunch' mode, for manual inputting of data) and convert the collected data into any of several formats for importing into statistical or database programs. SPSS-PC+, Version 4.0 was used to generate frequency counts, cross-tabulations, and probability measures. SPSS-PC+ provided us with the power and flexibility needed for data analysis within a group structure. Further, the QPL software provided an option to convert data easily into SPSS format. QPL, SPSS-PC+, and the data sets collected during this study were all loaded on one PC to which the committee had access.

6. Budget

The human and fiscal resources available for the project were limited. We needed to create, duplicate, distribute and collect the survey forms; input and analyze the data; and share the results with the Library, all within a budget of $1000. The human resources

included a portion of the time of the eight members of the Measurement and Evaluation Subcommittee, the assistance of Prof. James Kluegel, Head of the Sociology Department, the UIUC Social Sciences Quantitative Laboratory consultants, and the cooperation of the entire Library staff.

B. Data Collection Instruments

The Subcommittee examined several methods of collecting data. The option of using transaction log data to further enhance data collection was also examined. However, it was decided that transaction logs did not capture information about how users identify and physically locate periodical articles. It was determined that user surveys distributed to patrons known to be seeking journal literature would target users at the appropriate time in the research process. Further, the Subcommittee decided to design forms that would enable Library staff to keep a running daily tally of activities related to the provision of periodical information.

Questionnaires and other data collection forms were created on a word processor using the QPL language and were imported into QPL for data collection and conversion. QPL allows the creation of questions with multiple choice answers, "number" answers, short phrases, or dates. A sample page from a survey instrument as constructed with QPL is included in Appendix B. When questionnaires were modified, based on the pretest, it was straightforward to update the QPL source files to reflect these changes. A sample packet of all of the data collection forms and the accompanying staff instructions and information is included in Appendix A.

In the "Reference/Service Point Tally Sheet", we identified three major patron assistance functions: finding serials in the UIUC collection, assisting patrons in their use of periodical article finding tools, and interpreting the information from periodical article finding tools. The first function, finding serials within the Library's collection, was a direct measure of staff involvement in the location of serials within the Library and an indirect measure of actual use of serials by the Library's users. Since periodical use was difficult to measure, we approached it from more than one direction. The second function, assisting users in discovering periodical articles, measured staff involvement in using current periodical article finding tools. We believed it would provide some insight into how "user friendly" these tools

are. It would also reveal current patterns of use among the several approaches currently available to our Library's patrons. The third function measured by this survey highlighted the staff workload in interpreting citation information that the patron may have found (unaided by Library staff) in these tools.

The "UIUC Library Survey" was administered to the Library's patrons at 36 sites within our system. This survey reported which tools the patron used to discover the existence of the first article being sought and the perceived ease of use of these tools. Library staff members distributed the survey to patrons who either asked a question about a particular journal or periodical citation, or patrons who exhibited behavior which clearly indicated they were in the process of using periodical sources.

The form entitled "Re-Shelving, Machine Servicing and Mutilation Statistics" enabled us to gather data on all the ways that the Library staff expend time and energy dealing with the physical workload of providing access to periodical literature. The merging of these multiple topics into one form, in spite of some lack of common ground, resulted in a focus for staff on the nuts and bolts aspects of periodical service, as well as on the wear-and-tear to the machines which facilitate periodical access in some way. Again, the aim of the survey was to identify all the ways in which providing access has an effect on the Library's staff.

Three methods were used to measure interlibrary borrowing and lending activity, in an effort to determine statewide use of our Library's periodical collection which was instigated by the IO+ system.

1. ILL Patron Survey. Patrons requesting articles through ILL Borrowing services were asked to identify which tool they used to find the citation they were currently seeking.

2. LTLS Data Form. Interlibrary borrowing requests were examined to determine if the unavailability of material owned by UIUC was a factor in the use of inter-library borrowing services, or if the material was not owned at UIUC.

3. IRRC Data Form. Interlibrary lending requests for articles from the UIUC collections were examined to determine the format of citation source and the material's availability at UIUC.

C. Data Inputting

At the end of the survey period, we divided into teams for inputting data. This was the

most labor-intensive phase of the study. Once the data was in electronic format, extensive error-checking was performed before the statistical analysis began.

D. Statistical Measures Used

A combination of statistical measures were used in the analysis of data. Descriptive statistics were used throughout to determine the frequency with which activities occurred. In addition, one measure of correlation was used, and a two-tailed measure of probability was used. The chi-square statistic was used to determine the correlation between dependent and independent variables in the same data set within the same year. Typically, a chi-square statistic of .4 or less is considered the cut-off point for determining significance. A high correlation indicates that a library's average for a particular variable in one year can be predicted from the other year. The two-tailed t-test was employed to measure the probabiltiy that the occurrence of the means of the same variables for two separate years (i.e., 1991, 1992) differing from zero was the result of chance. For example, a probability figure of .10 suggests that there is a 10% likelihood that the results are due to chance. Typically, .10 represents the upper threshold for considering significance. In the SPS program a significance level of less than .00005 is printed as .00000. The very low probability suggests that it is highly unlikely that the two variables in the chi-square test are independent in the population.

IV. Results

A. Equipment and Reshelving Survey

Among the factors that the survey was intended to measure was increased wear and tear on periodical volumes and library equipment as well as any increases in staff time spent in relation to volumes and equipment. In fact, as Table 1 shows, there was a 13.95% overall increase in this kind of activity from 1991-1992. Although this was not found to be statistically significant, there were modest increases in the number of periodical volumes shelved (13.94%) and in re-stocking of workstation printers (21.74%). More substantial increases were found in PC breakdowns (31.19%), patron assistance (32.33%), and workstation printer breakdowns (51.61%). Very large increases were found in reader-printer breakdowns (106.52%) and in reader-printer re-stocking (353.85%). Although the increase in compact shelving breakdowns was over 30%, in absolute numbers the incidence was very

small.

Decreases occurred in photocopier breakdowns (15.47%) and in reported theft and mutilation (59.42%). The number of times photocopiers were re-stocked remained substantially the same over the period.

Analysis

At the outset of the investigation, it was hypothesized that no changes in reshelving of bound volumes and unbound issues, no changes in machine servicing, and no changes in mutilation would be brought about by the addition of article databases to IO+. In fact, the study reveals changes in all of these activities; however, the increase in printer breakdowns was the only statistically significant change from 1991 to 1992. This appears to be a logical result of increased article database searching. If more IO+ and CD-ROM searches are being done, more intensive use of the printers may result in increased printer problems.

The large increase in stocking and problems with microfilm/microfiche reader-printers (which was not statistically significant) was unexpected, but it was not the result of adding journal article databases to IO. It can be explained by the fact that the bulk of the increased activity was reported in two units, both of which had acquired additional reader-printers between the two survey periods. Further, one of the units had lowered the price of reader-printer copies in April 1991.

The study revealed that, in absolute numbers, there was a large amount of library staff time invested in both survey periods in handling periodicals, in tending the machines used to search for them, read them, and copy them, and in assisting patrons. Detailed statistics are in Table 1. Adding article databases to IO+ had the effect of increasing staff workload related to periodical use, but an undetermined effect on library materials. Therefore, three hypotheses were supported: **Hypothesis 1**--Expanded access would have no significant effect on the number of bound serial volumes and unbound issues reshelved; **Hypothesis 2**--Expanded access would not significantly increase the amount of photocopy machine and computer printer servicing; **and Hypothesis 3**--Expanded access would not significantly increase the amount of serial mutilation.

B. Reference and Service Point Survey

In the Reference/Service Point Tally Sheet, the investigators identified three areas where

library staff rendered assistance to patrons: finding serials in the UIUC Collection, helping patrons use bibliographic tools to locate periodical articles, and interpreting information from these tools.

The first function, finding periodicals within the Library's collections, was a direct measure of staff involvement in the location of periodicals within the Library, and a partial measure of the actual use of periodicals. In the survey, two types of questions were tallied to measure this function, questions about the specific periodical holdings and questions about the location of periodicals within our large and decentralized library, comprised of 38 departmental libraries.

In Table 2, the results for both the 1991 and 1992 tallies of these measures are shown. From 1991 to 1992 there was a gross decrease in the number of questions asked. The investigators applied a two-tailed probability test to measure whether the difference of the two measures were actually statistically significant. Our findings indicated that for questions about location there was a 17.6% probability that the change was due to chance, and for questions about holdings, only a 10.1% probability that the change was due to chance. Typically a threshhold of 10% (.10 in the table) represents the upper threshhold for considering significance.

The second function, assisting users in the use of bibliographic tools to locate periodical articles, measured staff involvement in this area. We believed it would provide some indication of how easy or difficult it was for this user population to use these tools. It would also indicate current patterns of use among the several approaches currently available to our patrons. In the survey, five types of questions were used to measure this function. Tallies were recorded for any question relating to the use of IO+, our online catalog, the use of CD-ROM, printed indexes, bibliographies or other lists, or for computer searches done by library staff.

The measures for this second function were indicated in the variable name by those beginning with the letter U (for "using") in Table 2. For all measures but the one concerning using IO+, the results were not significant. The t value ranged from .372 to .814, indicating that there was a fairly high likelihood that the results were due to chance, from 37.2% to 81.4%. As far as using IO+ was concerned, there was no change reported because

these indexes were not available in 1991, and it was the effect of this introduction that we attempted to measure.

The third function, interpreting information from these tools, measured the staff workload in interpreting citation information, which we felt would be an indication of the level of bibliographic knowledge of our patrons. In the survey, seven types of questions were tallied to measure this function. These were questions relating to interpreting information from IO+, CD-ROM, printed indexes, word of mouth, bibliographies, computer searches done by Library staff, and other sources not specifically mentioned here.

In Table 2, the measures for this function are indicated in the variable column by variable names starting with I (for "interpreting"). Again, in spite of the gross differences between 1991 and 1992, the likelihood that these differences between the two years occurred by chance ranged from 19.7% for questions relating to interpreting searches done by a library staff member to 78.1% for questions relating to interpreting information from a printed index.

Analysis

The only statistically significant change occurring with less than 10% likelihood that the differences were due to chance was in the question dealing with holdings information. The apparent change between 1991 and 1992 suggests that the introduction of IO+, which includes the Library location and call number for journals in each citationn, had a tangible effect on the user population. The result of this effect was to reduce the number of questions asked about holdings, thereby decreasing staff time devoted to this activity. **Hypothesis 6 was supported**--expanded access would not increase the number of reference questions asked about serials. **Hypothesis 4 was not supported**--Expanded access would have no significant effect on the types of citation sources chosen by patrons to identify journal articles. Since all the remaining differences between the two years' measurements had a greater than 10% likelihood that the difference was due to chance, the investigators interpreted this to mean that no significant change occurred. Hence, no further interpretation of these data seemed warranted.

C. Interlibrary Borrowing and Lending Surveys

Because of the significant emphasis placed on resource sharing in Illinois, especially

at UIUC, a section of this research project was devoted to obtaining measures of the effect of expanded electronic access to journal article information on interlibrary loan photocopy requests. We examined both the effect of expanded access on our own patrons' requests for materials outside the UIUC collection, as well as its effect on the volume and type of requests from patrons at other libraries for materials from the UIUC Library collections.

1. Interlibrary Borrowing Patron Survey (ILLSURV)

Interlibrary loan requests made by UIUC patrons were examined to test Hypotheses 3, 4, and 5. The ILL Patron Survey treated Hypotheses 4 and 5 by eliciting patron status as well as how patrons identified the requested articles, as shown in Table 3.

There were 703 valid instances of patrons requesting articles through interlibrary loan services in 1991, and 524 valid instances in 1992. These surveys revealed that graduate students made up the majority of patrons in need of material not available at UIUC (1991--62%; 1992--56.3%). In 1992, faculty (17%), undergraduates (13%), and staff (11%) also used the ILL service, but less frequently.

Table 3 reveals that there was a significant change in the types of resources patrons used to identify journal articles between 1991 and 1992. The 1992 survey also attempted to elicit information about which IO+ database was used to identify the journal article which was being sought; unfortunately, this data was not useful, as 93% of the patrons queried did not indicate which IO+ database they were using. However, it was possible to obtain meaningful information about the types of resources used to identify journal articles by collapsing many categories into three: 1) ELECTRONIC--electronic resources; 2) LIBRARY, PRINTED--printed indexing and abstracting services; and 3) PATRON-SUPPLIED--a citation supplied from a bibliography or through word of mouth. Overall, there was a significant shift from the use of LIBRARY, PRINTED resources to ELECTRONIC resources to identify journal article citations. In 1991, over 35% of the ILL patrons used LIBRARY, PRINTED resources and 33% used ELECTRONIC resources. In 1992, this usage had shifted to 20% LIBRARY, PRINTED resources and 43% ELECTRONIC resources. PATRON-SUPPLIED resources increased slightly from 32% to 37%. These changes were found to be significant at the .00000 level.

Analysis

**Hypothesis 5**--expanded access would not increase the amount of interlibrary loan requests for photocopies of periodical articles, **was supported.** A change in the methods used by patrons to obtain citations for these requests was apparent. Therefore, **Hypothesis 4**, which stated that expanded access would not change the types of citation sources used by patrons to identify journal articles, **was not supported.** This analysis suggested a shift away from patrons using print indices toward the use of electronic resources such as ILLINET Online+, to locate citations for journal article .

2. Interlibrary Borrowing (Data Form (LTLS form)

In this section of the study, Library staff members took the information from the patrons' periodical article request forms and searched the Online Catalog and the shelves to verify the availability of the requested items. The categories were combined into larger units to allow a meaningful aggregate view of the data, as shown in Table 4. The first line, **Owned, Available**, showed the articles that were actually owned in the collection, for which status was accurately reflected in the Online Catalog, but that were not found by the patron. Comparing the data from 1991 to 1992 revealed that there was little change in the actual availability of periodical articles in the UIUC collections which had mistakenly been requested by patrons. This error rate was consistent with historical information collected by this unit.

The second line in the table, **Owned, NOS** (not on shelf), reflected those items which appeared as an owned title in the Online Catalog, but which were not on the shelf because they were in circulation, lost, stolen, or unavailable due to mutilation. There was a reduction in this category from 11% in 1991 to 5% in 1992, but the absolute numbers for these percentages were quite small, and thus precluded deeper interpretation. The third line in Table 4, **Not Owned**, included those items for which the Online Catalog accurately reflected that the title or the item containing the needed article was not in the collection. Overall, there was no evidence that availability of materials decreased significantly from one year to the next.

3. Interlibrary Lending (Illinois Research and Reference Center) Data Analysis

IRRC data included requests from non-UIUC individuals and libraries that seek

materials from the UIUC's collections. The IRRC Data Form resulted in 3,425 valid cases for 1991 and 1,959 for 1992 (Table 6). In both years, the majority of requests (75.3%) in 1991, and 67.9% in 1992 were **Owned** by the Library. Reported Instances of a title or item not being owned by the Library (**Not Owned**) were 541 (16.2%) in 1991, and 345 (18.2%) in 1992. Items which the Online Catalog reported that the Library owned, but were not found on the shelves due to being in circulation, missing, or mutilated, **(Owned, NOS)**, accounted for 8.5% of the total in 1991, and 13.9% of the total for 1992. Although staff cuts may have curtailed the process of checking the shelves twice for items in 1992, it is doubtful that this was the sole factor that could account for the large increase in items not on the shelves from 1991 to 1992. The percentage of requests that matched the Online Catalog record (**Owned-- Avail.**) declined from 73.3% in 1991 to 65.9% in 1992. Thus, **Hypothesis 3 was not supported**--Expanded.

In both 1991 and 1992, the majority of requests had no verification indicated (Table 6). Table 6 also revealed an increase in the number of requests which were verified using an electronic resource for 1992.

Although electronic resources comprised a larger portion of verification sources used compared to traditional sources, the end result was not a higher proportion of verified requests, but rather a slight decrease in verified requests. This could suggest that patrons see less need to record their source when the ease of use of that source or the frequency with which they use that source increases.

Although the overall numbers were small, the increase in verification using Electronic resources from 2.6% in 1991 to 7.7% in 1992 was significant, and thus does **not support Hypothesis 4**--Expanded access would have no significant effect on the types of citation sources chosen by patrons to identify journal articles.

Analysis

A cursory comparison of the number of requests for photocopies of journal articles suggests that **Hypothesis 5 was supported**: Expanded access did not significantly increase the amount of interlibrary loan requests for photocopies of journal articles.

However, it is important to note that the IRRC underwent both budget and staffing cuts,

significant changes which could be construed to challenge two of the assumptions of our study. Although the extent of the effect of these cuts on the results of this study cannot be determined, the reader should be aware that these external factors may have affected the results of this portion of the study. **Hypothesis 3 was supported. Hypothesis 4 was not supported** by the data collected, indicating that there was a significant shift in sources patrons used to find journal article citations.

C. Patron Survey

The final area of analysis was the survey conducted among patrons who were looking for periodical articles in the UIUC Library. Our objective was to identify the major elements of user behavior in their identification and use of periodical articles. The survey included questions about how often the Online Catalog was used, how difficult or easy it was to find periodical information in the Online Catalog, and how much time was required to compile a list of citations.

After preliminary analysis, the methods for finding articles were clustered into ELECTRONIC, LIBRARY, PRINTED, and PATRON-SUPPLIED. In Table 7, the correlation between the year (YEAR) and the method used for finding journal articles (FINDCLUS) showed a substantial increase from 1991 to 1992. In 1991, only 25% of the patrons identified an electronic resource as the source of a citation. However, by 1992, the category of electronic resources was cited by nearly 52% of the patrons surveyed as the type of resource used to find journal articles. This change represented a significant shift in patron periodical seeking behavior.

We also investigated whether some sectors of our patron population made this shift more readily than others. Hypothesis 9 examined the frequency of use of the Online Catalog as it related to using electronic resources. Tables 8 and 9 revealed that patrons who indicated they used the online catalog at different frequencies exhibited different behavior in finding out about periodical articles. We divided online catalog users into three catagories that are represented in Tables 8 and 9 by these upper-case terms: FREQUENT, MODERATE, and RARELY (the terms themselves referring to the frequency of online catalog use indicated by the patron on the survey). The Subcommittee felt that these data would be of particular interest to the Online Catalog Advisory Committee as well as

individual staff members who work closely with the Online Catalog.

Some especially interesting results results are discussed here. In 1991, even the frequent users of the Online Catalog used electronic resources to find journal citations infrequently, approximately 20% of the time, while patron-supplied was the dominant resource with nearly 60%. Among moderate users in 1991, resource use was split evenly among the three sources: 33% electronic, 36% library, printed, and 32% patron-supplied. Among the group that uses the Online Catalog rarely, the resources used were divided between library, printed and patron-supplied at 40% and 38% respectively, with 22% using electronic resources. In 1992, the patterns revealed a substantially different picture. Among frequent users of the Online Catalog, 50% used electronic resources, with patron-supplied falling to 35% and library, printed plummeting to 15%. Similarly, moderate online catalog users shifted dramatically from 32.9% use of electronic resources in 1991 to 58.7% use of the same resources in 1992. Conversely, between 1991 and 1992 patrons who used the catalog rarely shifted away from using library, printed resources, some using electronic, but more relying on patron-supplied. These figures are significant at the .00000 level. Thus the data show that **Hypothesis 9 was not supported**. Conversely, the findings indicate that **the frequency with which the patron uses the online catalog is strongly predictive of the use of electronic resources for finding journal articles.**

Another method chosen for examining the changes in user behavior was to analyze the data by subject area. All the patron data surveys were identified by departmental library location. The survey data were grouped according to the existing councils which represent libaries clustered into broad subject areas, and Central Public Services, which is comprised of library units that serve the entire campus. Tables 10 and 11, (COUNCIL by FINDCLUS controlling for YEAR), enabled us to examine journal article seeking behavior of users in libraries clustered around the following broad subject and functional areas: Humanities (HUM), Life Sciences (LIF), Physical Sciences (PHY), Social Sciences (SOC), and Central Public Services (CPS). The second row of figures in each cell represents the percentage of that council's patrons using that clustered resource. In 1991, only 6.7% of the Humanities patrons used an electronic resource to identify periodical articles. This contrasts with the 18% of the Life Sciences patrons, 16% of the Physical Sciences patrons and the 37% of

Social Science patrons who reported using electronic resources in 1991. The 1992 column for electronic resource use reveals the following percentages: 34% of Humanities, 67% of Life Sciences, 46% of Physical Sciences and 56% of Social Science patrons were using electronic resources to find journal articles. Since the Central Public Services (CPS) row represents patrons from all subject areas in unknown proportions, this row is less useful for identifying subject differences. Patrons of libraries in the Central Public Services cluster, which had a mid-range percentage in 1991 of 28% is again in the mid-range of the electronic revolution with 51% of the patrons having used electronic resources to discover their journal articles.

Analysis

It is difficult to determine whether users' shift from the use of traditional print library resources or from self-supplied sources to the use of electronic resources in finding journal articles is an improvement in their success in finding journal articles, or simply a change in the methods which they employ. We suggest it is both: Some patrons who literally could not find information on their topic in traditional sources, because of the narrowness or newness of the topic, were able to find the same information using the keyword searching options which the ILLINET Online Plus search user interface software now offers. For other users who are not well-informed about the nature of searching for journal articles by using print sources, the use of electronic journal citation databases may not be advantageous without some prior instruction.

The information in Tables 10 and 11 reflect the diversity of approaches to finding journal articles of patrons using the libraries across broad groupings of library units. The changes from 1991 to 1992 in the use of electronic reference sources may be reflective of the array of sources, or of differing patterns of research, or a combination. Since the link between the Library council of the survey and subject discipline is physical, direct conclusions about the role of electronic reference sources or about the nature of journal use in different disciplines are not possible.

## V. Conclusions and Summary

### A. External factors and Limitations

There were several limitations on this study. Perhaps the most important one was the

size and representativeness of the sample taken. Although the investigators assumed that this was a representative sample, the nature of the data collection rendered it impossible to verify this. No legitimate sampling method was employed. Because of the large number of data collection sites and number of personnel involved in data collection, there was no scientific assurance that data was collected without bias, or that a representative sample of journal article users was chosen. By choosing similar two-week periods one year apart, however, the investigators intended to introduce some validity in the measurements taken. Further, by training the data collectors, reliability of the resulting data was strengthened. Although a more rigorous experimental design would have increased the reliability of data and causality among variables, it would have introduced changes to service provision that would not have been representative of the actual Library environment. We believed that broad participation in a field study with practical applications was more fitting to our research than attempting to strictly control this particular experimental environment.

Budget and staff cuts were two external factors which affected the outcome of the second year of the Interlibrary lending and borrowing surveys and data collection. The University Library's interlibrary lending office, the Illinois Research and Reference Center (IRRC), experienced pronounced changes in funding support in the fiscal year of 1992 that affected staffing levels and several policies and procedures on which its processing practices are dependent. Therefore, the changes described do not support Assumption 3--that ease of physically borrowing an item would not change, and Assumption 7--that there would be no change in interlibrary loan procedures that would affect the number of requests made. Although "the ease of physically borrowing an item either on-site or through interlibrary loan did not change" for UIUC patrons, it **did** change for patrons (and libraries) requesting journal article photocopies from the UIUC Library's collections. The fact that the IRRC's ability to support any potential increase in requests for ILL photocopies of journal articles was diminished undoubtedly affected the outcome of this portion of the study. The reader should be aware of these factors, and the limitations on the validity of the IRRC data and its resulting analysis.

The Subcommittee realizes the very real limits of the study. These limits are due to the inability to control or measure the underlying assumptions; thus, we were unable to

determine any role potential changes in these assumptions might play in the results. In some cases, we measured activities that occurred too infrequently to be meaningful in the two-week time samples of the study, like compact shelving jams or reports of journal thesft or multilation.

The strength of this research design came from its reliance on simple data gathering techniques which are second nature to virtually all library public service staff. It departs from the norm by not relying solely on patrons' reported uses of periodical literature. This study enabled us to map the intricate organizational network that supports periodical usage at a given access level. The study sought to measure the current levels of journal access, interlibrary loan, reference assistance, demands on equipment and staff, and users' journal article seeking behavior. These data are revealing because they highlight current patterns of use and staff involvement in the provision of periodical information. Informal feedback from Library staff confirmed that *the data collection instruments elicited measurable data to describe the instances of service they provide most frequently, but which have not heretofore been quantified.*

User survey participants were self-selected due to the fact that they only received the survey if they were looking for a specific periodical citation. However, each library reported a high rate of return on the surveys which they distributed. A high level of participation and attention to detail was evident in questions and feedback from both staff and patrons throughout the data collection period. Users appeared eager to have input concerning their information-seeking habits.

B. Support for hypotheses

This section presents a summary of the hypotheses, and an indication of how each was supported by the data analysis:

H1. Expanded access would have no significant effect on the amount of bound serial volumes and unbound issues reshelved.
**Supported (Equipment and reshelving).**

H2. Expanded access would not significantly increase the amount of photocopy machine and computer printer servicing.
**Supported (Equipment and reshelving).**

H3. Expanded access would not significantly increase the amount of serial

mutilation.
**Supported. (Equipment and reshelving).**

H4. Expanded access would have no significant effect on the types of citation sources chosen by patrons to identify journal articles.
**Not supported (ILL, Patron).**

H5. Expanded access would not significantly increase the amount of interlibrary loan requests for photocopies of journal articles.
**Supported (ILL, IRRC).**

H6. Expanded access would not significantly increase the number of reference questions asked about serials.
**Supported (Reference and Service point).**

H7. Expanded access would not cause a significant change in the type of reference questions asked about serials.
**Not supported (Reference and Service point).**

H8. A user's status in the University community is not a predictor of journal article seeking behavior.
**Not supported (ILL, Patron surveys).**

H9. The frequency with which a patron uses the online catalog is not a predictor of use of IO+.
**Not supported (Patron survey).**

H10 Expanded access would not cause a significant change in the journal article seeking behavior among users in libraries clustered into broad subject disciplines (Arts and Humanities, Life Sciences, Physical Sciences, Social Sciences, General population (Reference, Documents, Newspaper, Undergraduate, University High School, Circulation and Bookstacks).
**Not supported (Patron survey).**

In brief, the results of this research suggest that enhanced electronic access to journal article information has resulted in a slight increase in the use of periodicals, but this increase was not found to be statistically significant. Conversely, enhanced electronic access to journal article citations has caused a significant change in the choice of resources users employ to find journal articles.

At the outset of this study there was a perception among Library staff that increased electronic access to periodical literature would result in a significant increase in the attendant support activities--stocking and repairing printers, photocopiers, reader/printers, and re-

shelving of bound volumes and unbound issues of journals. Table 1 clearly reflects an increase in these activities from 1991 to 1992; however, these are not statistically significant increases. These results should not be interpreted as contradictory. Rather, the reason for the uninteresting results is the fact that the time sample is too limited. The size of the population is appropriate, since it represents the universe of libraries on this campus, but the events covered in the survey (asking questions about using CD-ROM resources, journal holdings, compact shelving jams) are rare occurrences in the continuum of total Library activities. Thus, if we wish to re-test the hypotheses represented by these data, it would be necessary to expand the data collection over a considerably larger sample of time than that chosen for this study.

If we think in terms of how users search for journal articles, enhanced electronic access to this information has resulted in an increase in the use of ILLINET Online Plus to find journal article citations; however, these data suggested that it did not necessarily follow that users retrieved and photocopied **more** journal articles in 1992 than they did in 1991, prior to the introduction of the IO+ journal citation databases.

There is some evidence that patrons wished to obtain articles that the Library increasingly does not own (through failure to own the needed volumes of a particular title, or through failure to hold the title). It is recommended that the Library undertake further exploration of this situation.

## VI. Recommendations

The 1991 data alone indicates that before the introduction of enhanced electronic access to journal citations through ILLINET Online Plus, the Library carried on a brisk trade in providing information and support services related to patrons' use of periodicals. Our comparison of the 1991 data with the 1992 data revealed that with enhanced electronic access to journal article information, UIUC Library users have readily embraced change at a rate that may have already surpassed the Library's ability to provide the necessary user services and assistance.

Based on the results of this study, the subcommittee makes several recommendations for Library consideration. First, users' willingness to migrate to electronic resources suggests that *the Library ought to further develop our existing service expertise by integrating a cohesive*

*program of training in electronic information resources for staff at appropriate levels.* Well-developed and continued training programs can maintain staff expertise at the information resource-finding forefront, enabling them to share expertise, and to apply that knowledge by developing instructional programs and materials for diverse user populations.

Second, there is some indication that patron preference for using electronic resources to find journal citations will increase significantly. Therefore, we recommend that *the Library continue to support the addition of more journal citation databases to ILLINET Online Plus, or through networked access to CD-ROM or other available and appropriate databases.* Increased electronic access will necessitate increased physical accessibility to IO+. In order to accommodate this need, *we recommend that a rational plan for adding public access terminals be developed and implemented throughout the Library.*

Due to the fact that the time sample was too small, the crucial information about the effect of enhanced electronic access on staff activities which support users' journal article seeking was inconclusive. Current decision-making about technology and where to put it could be augmented if the Library were to more closely monitor the activities related to journal article seeking. *We recommend that the Library devise and implement ongoing methods to collect, examine, and analyze data that reflect the effect of electronic access to journal article information on staff, collections, and users.*

Finally, we have identified two areas which, although they are related to this study, did not fall directly within the scope of our examination, but which deserve further investigation. Further investigation of theft and mutilation of periodicals is recommended. Finally, we recommend further study of the factors that can cause an increase in unavailability of journal articles (e.g., journal cancellations; availabilty of staff to retrieve this information).

Bibliography


1. Bland, Robert N. "Evaluating the Performance of the OPAC: A Redefinition of Basic Measures." North Carolina Libraries 47, no. 3 (Fall, 1989): 168-173.

2. Lynch, Clifford A., and Michael G. Berger, "The UC MELVYL MEDLINE System: A Pilot Project for Access to Journal Literature Through an Online Catalog." Information Technology and Libraries 8, no. 4 (December, 1989): 371-383.

3. Mischo, William H., Beth Sandore, Sharon E. Clark, and Michael Gorman. "University of Illinois at Urbana-Champaign." Campus Strategies for Libraries and Electronic Information. Caroline Arms, editor. (EDUCOM Strategies Series on Information Technology), 1990, pp. 117-141.

3. Seymour, Sharon. "Online Public Access Catalog User Studies: A Review of Research Methodologies, March 1986 - November 1989," Library and Information Science Research 13, no. 2 (April-June, 1991): 89-102.

4. Siegel, Elliot R., Karen Kameen, Sally K. Sinn, and Frieda O. Weise. "A Comparative Evaluation of the Technical Performance and User acceptance of Two Prototype Online Catalog Systems." Information Technology and Libraries 3 (1984) pp. 35-46.

5. "Final Report: The Melvyl Medline Project." Office of the Assistant Vice President, Information Systems and Administrative Services, Office of the President and University-wide Services, University of California. June, 1989. (Co-principal investigators: Mary Horres and Mike Berger.)

6. "Mounting Local Tapes: The NOTIS Interface Combines Turnkey Ease and Adaptability," Online 14, no. 4 (July, 1990): 38-45.

   Bakowski, Vicki Bloom, and Lisa E. Moeckel. "The Impact of Local Tape Databases on the Library: The M(I)DAS Touch."

   Jackson, Kathy M. "Loading Wilson Indexes Locally -- The Texas A & M Experience."

7. "Special Issue: Locally Loaded Databases in Online Library Systems." Information Technology and Libraries 8, no. 2 (June 1989): 99-185.

   Bailey, Charles W., Jr. "Public-Access Computer Systems: The Next Generation of Library Automation Systems."

Card, Sandra. "TOC/DOC at Caltech: Evolution of Citation Access Online."

Culkin, Patricia B. "Rethinking OPACS: The Design of Assertive Information Systems."

Drake, Miriam A. "The Online Information System at Georgia Institute of Technology."

Evans, Nancy. "Development of the Carnegie Mellon Library Information System."

Fayen, Emily Gallup. "Loading Local Machine-Readable Data Files: Issues, Problems, and Answers."

Klemperer, Katharina. "New Dimensions for the Online Catalog: The Dartmouth College Library Experience."

Machovec, George S. "Locally Loaded Databases in Arizona State University's Online Catalog Using the CARL System."

Potter, William Gray. "Expanding the Online Catalog."

Wilson, Flo. "Article-Level Access in the Online Catalog at Vanderbilt University."

## UIUC LIBRARY SURVEY - INSTRUCTIONS FOR IMPLEMENTATION

*Library Unit:* This line is to be filled in by the service point, in advance of giving it to the patron. If a library has more than one service point, they should be distinguished. For example, Reference Library - North Desk.

*Date:* This line is to be filled in by the service point, in advance of giving it to the patron.

**General Administration Instructions:**

Telephone patrons are excluded from the scope of this patron survey.

It is important that each patron who is seeking to locate an article within the UIUC Library during the survey period is asked to fill out a survey form. It is also important that the patron fill out only 1 form per visit. Each trip to the Library is a new unit of measurement. Ask the patron if he/she has completed a survey form on THIS visit to the Library.

The survey is designed to reach the patrons who have already used some source of information to identify one (or more) particular articles of interest to them at the time. For example, the survey form is to be given to those patrons who are asking for "This article by J. Jones in the journal Time is Money." It is not for those patrons who say "I need to find three articles on my topic."

The survey is to be handed to the patron on the clipboard with a pen/pencil.

It will improve the survey return rate if you ask the patron to return the form to yourself. It will help if you are able to make the importance of the form clear to the patron.

Thank the patron for agreeing to participate. Please indicate to the patron that it is a VERY brief survey and should take no more than a minute or two to complete.

When the survey is returned, please scan it for completeness. If it seems reasonable, ask the patron to complete if there are blanks.

Each completed survey form should be put in a specified place at the service point. The completed forms should be collected in each unit each day of the two week survey period and sent **together** to Beth Sandore, 220 Library, on Monday, February 17, 1992. Questions about correctly interpreting the guidelines should be directed to any member of the SubCommittee: Sandore, Block, Burger, Chaplan, Kluegel, Newsome, L. Romero, or Stenstrom.

Thank you for your assistance in administering this survey.

2/92

## INTERLIBRARY LOAN QUESTIONNAIRE

The information below is being requested for a limited period of time so that we may better serve you in the future. Please leave the survey attached to your ILL request form. Thank you.

1. WHAT IS YOUR STATUS AT THE UNIVERSITY OF ILLINOIS?
*(check only one please)*

____Undergraduate ____Graduate ____Faculty ____Staff ____Other

2. HOW DID YOU FIND OUT ABOUT THE ARTICLE YOU ARE LOOKING FOR NOW? *(check only one please)*

_____ CD-ROM index, e.g., WILSONDISC, InfoTrac, SilverPlatter
_____ Printed index, e.g., Readers' Guide
_____ Word of mouth, e.g., instructor, colleague, friend
_____ Bibliography, course reading, or other list, e.g., endnotes
_____ Computer search done by library staff member
_____ Other (Please specify: _____)

*(All forms should be returned together to B. Sandore, 220 Library, on Feb. 11, 1991)*

(ill.pre1/91)

IRRC DATA FORM

STATUS:

_____Illinois _____Non-Illinois

VERIFICATION:

____ Periodical index (format unidentified)
____ Other printed bibliography
____ Online Catalog (IO+) References to Articles e.g., Current Contents, Humanities Index
____ CARL Uncover on Online Catalog
____ CD-ROM specifically mentioned
____ Online bibliographic search
____ No verification given
____ Other

Title is reported as being owned at UIUC:

____ LCS reports piece as available
____ LCS reports piece in circulation, rlost, missing, or snagged
____ LCS reports particular piece not owned
____ At bindery
____ Not on shelf, stolen, or mutilated
____ Title not owned at UIUC: _____

*(All forms should be returned* **together** *to B. Sandore, 220 Library, on Feb. 17, 1992)*

(irrc.stf 2/92)

DEFINITIONS:

ACCESS MEDIA EQUIPMENT: machines used for searching journal databases, for printing the results of searches, for reading and/or printing copies of journal articles from microfilm or microfiche, and for photocopying the articles found as a result of database searches

BREAKDOWN, JAM, REPAIR: rebooting, mechanical failures or troubleshooting, paperjams in copiers or printers, calls to Campus Vending

TERMINAL OR PC: public access terminals for ILLINET Online or CD-ROM workstation

PRINTER: printer attached to ILLINET Online public access terminal or CD-ROM workstation

RE-STOCKING: putting paper in the printers or photocopiers; adding toner (if applicable); replacing light bulbs

RE-SHELVED: bound volumes or single issues that have been used in the library or charged out, that are left on tables or trucks and must be returned to their places on the shelves

REPORT: a patron tells a library staff member either in person or in writing that a journal or article is missing or mutilated



BEST COPY AVAILABLE

**RE-SHELVING, MACHINE SERVICING AND MUTILATION STATISTICS**

**LIBRARY:(____): _____ DATE: _____**

| BREAKDOWNS, JAMS, REPAIRS: | | TOTALS |
|---|---|---|
| _____ | Terminal or PC | _____ |
| _____ | Printer | _____ |
| _____ | Photocopier | _____ |
| _____ | Microfilm or microfiche reader/printer | _____ |
| _____ | Compact shelving units | _____ |
| **RE-STOCKING MACHINES:** | | |
| _____ | Printer | _____ |
| _____ | Photocopier | _____ |
| _____ | Microfilm or microfiche reader/printer | _____ |
| **PATRON ASSISTANCE:** | | |
| _____ | Patron instruction or assistance in operation of machine(s) | _____ |
| **RE-SHELVED PERIODICALS:** | | |
| _____ | Number of re-shelved periodicals | _____ |
| **THEFT AND MUTILATION:** | | |
| _____ | Number of reports of theft or mutilation of periodicals | _____ |

*(Record occurrences using hashmarks, and total them at the end of the day in the TOTALS column on the right. All forms should be returned together to B. Sandore, 220 Library, on Feb. 11, 1991.)*

(equipsvy.pre 1/91)

## INTERLIBRARY LOAN QUESTIONNAIRE

**The information below is being requested for a limited period of time so that we may better serve you in the future. Please leave the survey attached to your ILL request form. Thank you.**

1. WHAT IS YOUR STATUS AT THE UNIVERSITY OF ILLINOIS?
   *(check only one please)*

   ___Undergraduate ___Graduate ___Faculty ___Staff ___Other

2. HOW DID YOU FIND OUT ABOUT THE ARTICLE YOU ARE LOOKING FOR NOW? *(check only one please)*

   _____ CD-ROM index, e.g., WILSONDISC, InfoTrac, SilverPlatter
   _____ Printed index, e.g., Readers' Guide
   _____ Word of mouth, e.g., instructor, colleague, friend
   _____ Bibliography, course reading, or other list, e.g., endnotes
   _____ Computer search done by library staff member
   _____ Other (Please specify: _____)

*(All forms should be returned together to B. Sandore, 220 Library, on Feb. 11, 1991)*

(ill.pre1/91)

LINCOLN TRAIL LIBRARY SYSTEM DATA FORM

STATUS:

____Undergraduate ____Graduate ____Faculty ____Staff ____Other

Title is reported as being owned at UIUC:

_____ LCS reports piece as available

_____ LCS reports piece as being in circulation, rlost, missing, or snagged

_____ LCS reports particular piece not owned

_____ at bindery (reported by patron)

_____ not on shelf, stolen, or mutilated (reported by patron)

_____ title not owned at UIUC: _____

*(All forms should be returned* **together** *to B. Sandore, 220 Library, on Feb. 17, 1992)*

(ltls.stf 2/92)

## REFERENCE/SERVICE POINT TALLY SHEET

SERVICE POINT: _____ DATE: _____

(MAKE A HASH MARK FOR EACH TIME THIS OCCURS.)

| A. QUESTIONS ABOUT SERIALS: | | TOTALS: |
|---|---|---|
| _____ | HOLDINGS | _____ |
| _____ | LOCATIONS | _____ |
| **B. HOW TO USE:** | | |
| _____ | Online Catalog (IO+) References to Articles e.g., IBIS, ERIC, CARL | _____ |
| _____ | CD-ROM, e.g., WILSONDISC | _____ |
| _____ | PRINTED INDEX, e.g., READERS' GUIDE | _____ |
| _____ | BIBLIOGRAPHY OR OTHER LIST | _____ |
| _____ | COMPUTER SEARCH DONE BY LIB. STF. | _____ |
| **C. INTERPRETING INFORMATION FROM:** | | |
| _____ | Online Catalog (IO+) References to Articles e.g., IBIS, ERIC, CARL | _____ |
| _____ | CD-ROM, e.g., WILSONDISC | _____ |
| _____ | PRINTED INDEX, e.g., READERS' GUIDE | _____ |
| _____ | WORD OF MOUTH | _____ |
| _____ | BIBLIOGRAPHY OR OTHER LIST | _____ |
| _____ | COMPUTER SEARCH DONE BY LIB. STF. | _____ |
| _____ | OTHER (Please specify)_____ | _____ |

*(All forms should be returned* **together** *to B. Sandore, 220 Library, on Feb. 17, 1992.)*

**P l e a s e s e e r e v e r s e f o r i n s t r u c t i o n s .**

(refstf.pst 2/92)

*UIUC LIBRARY SURVEY*

LIBRARY UNIT: _____ DATE: _____

*** PLEASE PUT A CHECK MARK BY ONLY ONE ANSWER FOR EACH QUESTION *** THANK YOU ***

1. ARE YOU TRYING TO LOCATE ONE (OR MORE) SPECIFIC ARTICLE(S) THAT YOU HAVE IDENTIFIED?
   If NO, please return to the library staff member. If YES, continue.

2. HOW DID YOU FIND OUT ABOUT THE FIRST ARTICLE YOU ARE LOOKING FOR NOW?

   _____ CD-ROM index, e.g., WILSONDISC, InfoTrac, SilverPlatter

   _____ Printed index, e.g., Readers' Guide

   _____ Word of mouth, e.g., instructor, colleague, friend

   _____ Bibliography, course reading, or other list, e.g., endnotes

   _____ Computer search done by library staff member

   _____ Other (please specify) _____

3. HOW MANY ARTICLES ARE YOU LOOKING FOR NOW?
   _____1 _____2-5 _____6-20 _____20+

4. HOW MANY MINUTES DID IT TAKE TO PRODUCE THE LIST OF ARTICLE(S) YOU ARE LOOKING FOR NOW?
   ___Less than 5 ___5-15 ___15-30 ___30-60 ___60-120 ___120+

5. HOW HARD WAS IT TO PRODUCE THE LIST OF ARTICLE(S) YOU ARE LOOKING FOR NOW?
   ___Very Hard ___Hard ___Not too Hard ___Fairly Easy ___Easy

6. HOW OFTEN DO YOU USE THE ONLINE CATALOG, ON AVERAGE?
   ___ Every day ___ 1-3 times per semester
   ___ 1-6 times per week ___ 1 time per year
   ___ 1-3 times per month ___ never

7. WHAT IS YOUR STATUS AT THE UNIVERSITY OF ILLINOIS?

   ___Undergraduate ___Graduate ___Faculty ___Staff ___Other

**PLEASE RETURN THIS FORM TO A LIBRARY STAFF MEMBER**

(patron.pre) 1/91

APPENDIX B --SAMPLE PAGE, QPL SOURCE CODE

```
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
**                        Q P L SOURCE FILE                              **
**                                                                       **
**                     KATHLEEN KLUEGEL - EDITION 1.0                    **
**                                                                       **
**                          Patron Survey - 1992                         **
**** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
.CARD = 60
.TITLE = "Patron Survey - 1992"

.QUESTION = DATE                * Computer date of data input

.TYPE = XDATE

What is today's date?

.ANSWER                         *Computer supplies automatically

.NEXT = IDPATRON


.ESCAPE = FINISH              *  Press Escape key to end data entry


.QUESTION = IDPATRON             * Record ID Number - Patron Survey

.TYPE = NUMBER                   * Sequential ID number

Type in record ID number.

.ANSWER = 4                      * Up to a 4 Digit number

.NEXT


.QUESTION = SURVDATE                * Date Survey Completed

.TYPE = NUMBER = "##-##-##"         * Format is  MODAYR

What date was survey completed.

.ANSWER

.NEXT


.QUESTION = LIBRARY              * Library Unit

.TYPE = STRING

Library unit:

.ANSWER = 3                      * Enter 3 letter Library code. Info Desk = INF
```

# APPENDIX C: TABLES

**TABLE 1: Reshelving, Equipment Use, and Mutilation Reports: Periodical Use Study, Comparison Data, 1991 & 1992**

| Variable | 1991 N=405 | 1992 N=440 | % Change | 2-Tail Probability | Label |
|---|---|---|---|---|---|
| PCJAM | 109 | 143 | +31.19% | .540 | Online catalog terminal or PC breakdown |
| PRINTJAM | 124 | 188 | +51.61% | .124 | Printer breakdown or jam |
| COPYJAM | 575 | 486 | -15.47% | .345 | Photocopy machine breakdown or jam |
| FILMJAM | 46 | 95 | +106.52% | .342 | Microfilm or fiche reader or reader/printer breakdown or jam |
| SHELFJAM | 6 | 8 | +25% | (no variance) | Compact shelving breakdown or jam |
| PRINTSTK | 115 | 140 | +21.74% | .901 | Printer was re-stocked |
| COPYSTK | 907 | 916 | +0.99% | .762 | Photocopy machine was re-stocked |
| FILMSTK | 26 | 118 | +353.85% | .297 | Microfilm or microfiche reader/printer was re-stocked |
| ASSIST | 761 | 1007 | +32.33% | .677 | Patron instruction or assistance in operating |
| RESHELVE | 26191 | 29843 | +13.94% | .639 | Number of re-shelved periodicals |
| THEFT | 69 | 28 | -59.42% | .227 | Reported theft or mutilation of periodicals |

| | 1991 | 1992 | % Change |
|---|---|---|---|
| Total Equipment-Related Activity: | 2738 | 3129 | +13.95% |

## TABLE 2: Reference and Service Point Tally Sheet Data: Periodical Use Study, Comparison Data, 1991 & 1992

| Variable | 1991 N=366 | 1992 N=417 | % Change | 2-Tail Probability | Label |
|---|---|---|---|---|---|
| HOLDINGS | 2979.00 | 2439.00 | -18.13% | .101 | Questions about SERIAL HOLDINGS |
| LOCATION | 2988.00 | 2625.00 | -12.15% | .176 | Questions about SERIAL LOCATION |
| UIOPLUS | n/a | 650.00 | n/a | n/a | Questions about using IOPLUS |
| UCDROM | 640.00 | 648.00 | +1.25% | .814 | Questions about using CD-ROM |
| UINDEX | 300.00 | 254.00 | -15.33% | .372 | Questions about using printed index |
| UBIBLIO | 91.00 | 103.00 | +13.19% | .754 | Questions about using a bibliography or list |
| USTFSRC | 177.00 | 178.00 | +0.56% | .671 | Questions about using a computer search done by library staff |
| IIOPLUS | n/a | 422.00 | n/a | n/a | Questions about interpreting information from IOPLUS |
| ICDROM | 262.00 | 201.00 | -23.28 | .235 | Questions about interpreting CD-ROM printout |
| IINDEX | 155.00 | 150.00 | -3.23% | .781 | Questions about interpreting information from an index |
| IMOUTH | 93.00 | 138.00 | +48.39% | .323 | Questions about information obtained through word of mouth |
| IBIBLIO | 386.00 | 226.00 | -41.45% | .369 | Questions about interpreting a bibliography or list |
| ISTFSRC | 143.00 | 117.00 | -18.18% | .197 | Questions about interpreting a search done by library staff |
| OTHER | 44.00 | 35.00 | -20.45% | .582 | Questions about interpreting other information |

| | 1991 | 1992 | % Change |
|---|---|---|---|
| Total: | 8258 | 8184 | -0.90% |

TABLE 3: ILL SURVEY--CROSSTABS--STATUS OF REQUESTOR BY HOW THE CITATION WAS FOUND, 1991 & 1992

| 1991 | Count<br>Row Pct<br>Col Pct | Undergrad | Graduate | Faculty | Staff | Other | Row Total |
|---|---|---|---|---|---|---|---|
| ELECTRONIC | 1.00 | 11 | 163 | 28 | 23 | 6 | 231.000 |
| | | .048 | .706 | .121 | .100 | .026 | 0.331 |
| | | .190 | .374 | .280 | .230 | .667 | |
| PRINTED LIBRARY | 2.00 | 30 | 133 | 32 | 51 | 2 | 248.000 |
| | | .121 | .536 | .129 | .206 | .008 | 0.355 |
| | | .517 | .305 | .320 | .510 | .222 | |
| SELF-SUPPLIED | 3.00 | 17 | 140 | 40 | 26 | 1 | 224.000 |
| | | .076 | .625 | .179 | .116 | .004 | 0.321 |
| | | .293 | .321 | .400 | .260 | .111 | |
| | Column Total | 58.000 | 436.000 | 100.000 | 100.000 | 9.000 | 703.000 |
| | | 0.083 | 0.620 | 0.142 | 0.142 | 0.013 | 1.000 |

| 1992 | Count<br>Row Pct<br>Col Pct | Undergrad | Graduate | Faculty | Staff | Other | Row Total |
|---|---|---|---|---|---|---|---|
| ELECTRONIC | 1.00 | 29 | 139 | 21 | 35 | 2 | 226.000 |
| | | .128 | .615 | .093 | .155 | .009 | 0.431 |
| | | .372 | .471 | .231 | .614 | .667 | |
| PRINTED LIBRARY | 2.00 | 34 | 58 | 8 | 4 | 1 | 105.000 |
| | | .324 | .552 | .076 | .038 | .001 | 0.20 |
| | | .436 | .197 | .088 | .07 | .333 | |
| SELF-SUPPLIED | 3.00 | 15 | 98 | 62 | 18 | | 193.000 |
| | | .078 | .508 | .321 | .093 | | 0.368 |
| | | .192 | .332 | .681 | .316 | | |
| | Column Total | 78.000 | 295.000 | 91.000 | 57.000 | 3.000 | 524.000 |
| | | 0.149 | 0.563 | 0.174 | 0.109 | 0.006 | 1.000 |

| Chi-Square | Value | DF | Significance |
|---|---|---|---|
| Pearson | 80.79757 | 8 | .00000 |

Number of missing observations: 130

**TABLE 4: Interlibrary Loan, LTLS Data Form: Periodical Use Study, Comparison Data, 1991 & 1992**

| Variable | 1991 N=715 | 1992 N=642 | % Change | Label |
|---|---|---|---|---|
| AVAIL | 94 (13%) | 91 (14%) | +1% | Online Catalog (LCS) reports the item is available; |
| OWNED, NOS | 77 (11%) | 31 (5%) | -60% | Item owned but not on shelf, in circulation, at bindery, missing; |
| NOT OWNED | 543 (76%) | 520 (81%) | -5% | Online Catalog (LCS) reports either title or piece not owned; |

| | 1991 | 1992 | % Change |
|---|---|---|---|
| Total: | 715 | 642 | -11% |

TABLE 5: IRRC DATA FORM–CROSSTABS–STATUS BY YEAR, 1991 & 1992

| | Count<br>Row Pct<br>Col Pct | 1991<br>1.00 | 1992<br>2.00 | Row Total |
|---|---|---|---|---|
| ILLINOIS | 1.00 | 2083<br>.672<br>.609 | 1016<br>.328<br>.519 | 3,099.000<br>0.576 |
| NON-ILLINOIS | 2.00 | 1337<br>.586<br>.391 | 943<br>.414<br>.481 | 2,280.000<br>0.424 |
| | Column Total | 3,420.000<br>0.636 | 1,959.000<br>0.364 | 5,379.000<br>1.000 |

| Chi-Square | Value | DF | Significance |
|---|---|---|---|
| Pearson | 41.71126 | 1 | .00000 |

Number of Missing Observations: 5

TABLE 6: IRRC DATA FORM--CROSSTABS--VERIFICATION SOURCE (FINDCLUS) BY YEAR, 1991 & 1992

| YEAR | Count<br>Row Pct | ELECTRONIC | PRINTED LIBRARY | NONE OR OTHER | Row Total |
|---|---|---|---|---|---|
| | 1.00 | 88 | 685 | 2652 | 3,425.000 |
| 1991 | | .368 | .773 | .623 | 0.636 |
| | 2.00 | 151 | 201 | 1607 | 1,959.000 |
| 1992 | | .632 | .227 | .377 | 0.364 |
| | Column | 239.000 | 886.000 | 4,259.000 | 5,384.000 |
| | Total | 0.044 | 0.165 | 0.791 | 1.000 |

| Chi-Square | Value | DF | Significance |
|---|---|---|---|
| Pearson | 149.30293 | 2 | .00000 |

TABLE 7: PATRON SURVEY, 1991 & 1992–CROSSTABS–YEAR BY SOURCE OF CITATION (FINDCLUS)

| YEAR | Count<br>Row Pct | ELECTRONIC | PRINTED LIBRARY | SELF-SUPPLIED | Row Total |
|---|---|---|---|---|---|
| | 1.00 | 181 | 207 | 320 | 708.000 |
| 1991 | | .256 | .292 | .452 | 0.457 |
| | 2.00 | 437 | 142 | 263 | 842.000 |
| 1992 | | .519 | .169 | .312 | 0.543 |
| | Column | 618.000 | 349.000 | 583.000 | 1,550.000 |
| | Total | 0.399 | 0.225 | 0.376 | 1.000 |

Number of Missing Observations: 4

**TABLE 8: PATRON SURVEY, 1991 -- CROSSTABS -- FREQUENCY OF ONLINE CATALOG USE BY SOURCE OF CITATION (FINDCLUS)**

| | Count<br>Row Pct<br>Col Pct | FREQUENT | MODERATE | RARELY | Row Total |
|---|---|---|---|---|---|
| ELECTRONIC | 1.00 | 59 | 106 | 16 | 181.000 |
| | | .326 | .586 | .088 | 0.259 |
| | | .195 | .329 | .216 | |
| PRINTED LIBRARY | 2.00 | 58 | 116 | 30 | 204.000 |
| | | .284 | .569 | .147 | 0.292 |
| | | .191 | .360 | .405 | |
| SELF-SUPPLIED | 3.00 | 186 | 100 | 28 | 314.000 |
| | | .592 | .318 | .089 | 0.449 |
| | | .614 | .311 | .378 | |
| | Column Total | 303.000 | 322.000 | 74.000 | 699.000 |
| | | 0.434 | 0.461 | 0.106 | 1.000 |

| Chi-Square | Value | DF | Significance |
|---|---|---|---|
| Pearson | 63.28075 | 4 | .00000 |

TABLE 9: PATRON SURVEY, 1992–CROSSTABS–FREQUENCY OF ONLINE CATALOG USE BY SOURCE OF CITATION (FINDCLUS)

| | Count<br>Row Pct<br>Col Pct | FREQUENT | MODERATE | RARELY | Row Total |
|---|---|---|---|---|---|
| ELECTRONIC | 1.00 | 191<br>.446<br>.503 | 216<br>.505<br>.587 | 21<br>.049<br>.276 | 428.000<br>0.519 |
| PRINTED LIBRARY | 2.00 | 58<br>.417<br>.153 | 59<br>.424<br>.160 | 22<br>.158<br>.289 | 139.000<br>0.169 |
| SELF-SUPPLIED | 3.00 | 131<br>.510<br>.345 | 93<br>.362<br>.253 | 33<br>.128<br>.434 | 257.000<br>0.312 |
| | Column Total | 380.000<br>0.461 | 368.000<br>0.447 | 76.000<br>0.092 | 824.000<br>1.000 |

| Chi-Square | Value | DF | Significance |
|---|---|---|---|
| Pearson | 28.48294 | 4 | .00001 |

TABLE 10: PATRON SURVEY, 1991–CROSSTABS–COUNCIL BY SOURCE OF CITATION

| COUNCIL | Count<br>Row Pct<br>Col Pct | ELECTRONIC | PRINTED LIBRARY | SELF-SUPPLIED | Row Total |
|---|---|---|---|---|---|
| CENTRAL PUBLIC SERVICES | CPS | 100<br>.284<br>.552 | 102<br>.290<br>.493 | 150<br>.426<br>.469 | 352.000<br>0.497 |
| HUMANITIES | HUM | 3<br>.067<br>.017 | 17<br>.378<br>.082 | 25<br>.556<br>.078 | 45.000<br>0.064 |
| LIFE SCIENCES | LIF | 12<br>.182<br>.066 | 21<br>.318<br>.101 | 33<br>.500<br>.103 | 66.000<br>0.093 |
| PHYSICAL SCIENCES | PHY | 19<br>.160<br>.105 | 39<br>.328<br>.188 | 61<br>.513<br>.191 | 119.000<br>0.168 |
| SOCIAL SCIENCES | SOC | 47<br>.373<br>.260 | 28<br>.222<br>.135 | 51<br>.405<br>.159 | 126.000<br>0.178 |
| | Column Total | 181.000<br>0.256 | 207.000<br>0.292 | 320.000<br>0.452 | 708.000<br>1.000 |

| Chi-Square | Value | DF | Significance |
|---|---|---|---|
| Pearson | 27.31028 | 8 | .00062 |

TABLE 11: PATRON SURVEY, 1992--CROSSTABS--COUNCIL BY SOURCE OFCITATION(.FINDCLUS)

| COUNCIL | Count<br>Row Pct<br>Col Pct | ELECTRONIC | PRINTED LIBRARY | SELF-SUPPLIED | Row Total |
|---|---|---|---|---|---|
| CENTRAL PUBLIC SERVICES | CPS | 263<br>.509<br>.602 | 83<br>.161<br>.585 | 171<br>.331<br>.650 | 517.000<br>.614 |
| HUMANITIES | HUM | 12<br>.343<br>.027 | 7<br>.200<br>.049 | 16<br>.457<br>.061 | 35.000<br>0.042 |
| LIFE SCIENCES | LIF | 54<br>.675<br>.124 | 7<br>.088<br>.049 | 19<br>.238<br>.072 | 80.000<br>.095 |
| PHYSICAL SCIENCES | PHY | 48<br>.466<br>.110 | 17<br>.165<br>.120 | 38<br>.369<br>.144 | 103.000<br>.122 |
| SOCIAL SCIENCES | SOC | 60<br>.561<br>.137 | 28<br>.262<br>.197 | 19<br>.178<br>.072 | 107.000<br>.127 |
| | Column Total | 437.000<br>0.519 | 142.000<br>0.169 | 263.000<br>0.312 | 842.000<br>1.000 |

| Chi-Square | Value | DF | Significance |
|---|---|---|---|
| Pearson | 27.51744 | 8 | .00058 |